

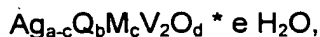
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We claim

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1. A multimetal oxide of the formula I,

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I

where

a is from 0.3 to 1.9,

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Q is an element selected from among P, As, Sb and/or Bi,

b is from 0 to 0.3,

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M is a metal selected from among Nb, Ce, W, Mn, Ta, Pd, Pt, Ru and Rh,

c is from 0.001 to 0.2, with the proviso that  $(a-c) \geq 0.1$ ,

d is a number which is determined by the valence and abundance of the elements other than oxygen in the formula I and

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e is from 0 to 20,

which has a crystal structure whose X-ray powder diffraction pattern displays reflections at lattice plane spacings  $d$  of  $15.23 \pm 0.6$ ,  $12.16 \pm 0.4$ ,  $10.68 \pm 0.3$ ,  $3.41 \pm 0.04$ ,  $3.09 \pm 0.04$ ,  $3.02 \pm 0.04$ ,  $2.36 \pm 0.04$  and  $1.80 \pm 0.04$  Å.

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2. The multimetal oxide according to claim 1 in which

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b is 0 and

c is from 0.01 to 0.1.

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3. The multimetal oxide according to claim 1 or 2 which has a specific surface area determined by the BET method of from 3 to 250 m<sup>2</sup>/g.

4. The multimetal oxide according to any of claims 1 to 3 in which M is Ce or Mn.

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5. The use of a multimetal oxide according to any of claims 1 to 4 for producing precatalysts and catalysts for the gas-phase partial oxidation of aromatic hydrocarbons.

## 2

6. A precatalyst which can be converted into a catalyst for the gas-phase partial oxidation of aromatic hydrocarbons and comprises an inert nonporous support and at least one layer comprising a multimetal oxide according to any of claims 1 to 4 applied thereto.
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7. The precatalyst according to claim 6 which comprises from 5 to 25% by weight, based on the total weight of the precatalyst, of multimetal oxide.
8. The precatalyst according to claim 6 or 7 whose inert nonporous support material comprises steatite.
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9. A catalyst for the gas-phase partial oxidation of aromatic hydrocarbons which comprises an inert nonporous support and, applied thereto, at least one layer comprising, as catalytically active composition, a silver-vanadium oxide bronze which comprises at least one metal M selected from the group consisting of Nb, Ce, W, Mn, Ta, Pd, Pt, Ru and Rh and/or in which the Ag:V atomic ratio is from 0.15 to 0.95 and the M:V atomic ratio is from 0.0005 to 0.25, which catalyst can be produced from a multimetal oxide composition according to claim 1 or a precatalyst according to claim 6.
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10. The catalyst according to claim 9, wherein the silver-vanadium bronze contains Ce or Mn.
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11. The catalyst according to claim 9 or 10 having a layer whose catalytically active composition has a BET surface area of from 2 to 100 m<sup>2</sup>/g.
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12. A process for preparing aldehydes, carboxylic acids and/or carboxylic anhydrides, in which a gaseous stream which comprises an aromatic hydrocarbon and a gas comprising molecular oxygen is brought into contact with a catalyst according to any of claims 9 to 11 at elevated temperature.
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13. The process according to claim 12, wherein the catalyst is produced in situ from a precatalyst according to any of claims 6 to 8.
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14. The process according to claim 12 or 13, wherein the reaction mixture obtained or a fraction thereof is brought into contact with at least one further catalyst whose catalytically active composition comprises vanadium pentoxide and anatase.
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15. The process according to claim 14, wherein the gaseous stream is passed successively over a bed of an upstream catalyst and a bed of a downstream

catalyst, where the bed of upstream catalyst comprises a catalyst according to claim 9 and the bed of downstream catalyst comprises at least one catalyst whose catalytically active composition comprises vanadium pentoxide and anatase.

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16. The process according to claim 15, wherein the catalytically active composition of the downstream catalyst comprises from 1 to 40% by weight of vanadium oxide, calculated as  $V_2O_5$ , from 60 to 99% by weight of titanium dioxide, calculated as  $TiO_2$ , up to 1% by weight of a cesium compound, calculated as Cs, up to 1% by weight of a phosphorus compound, calculated as P, and up to 10% by weight of antimony oxide, calculated as  $Sb_2O_3$ .

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17. The process according to claim 16, wherein the bed of the downstream catalyst comprises at least two layers of catalysts whose catalytically active composition has a differing Cs content, with the Cs content decreasing in the flow direction of the gaseous stream.

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18. The process according to any of claims 12 to 17, wherein o-xylene or naphthalene or a mixture of o-xylene and naphthalene is used as aromatic hydrocarbon and is oxidized to phthalic anhydride.

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